

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named
Inventor : Jing Gui

Prior Application:

Appln. No.:

Filed : Herewith

Group Art Unit: 2754

For : SLIDER WITH PRESSURE RELIEF
TRENCHES

Examiner: R. Tupper

Docket No.: S01.12-0695

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, D.C. 20231

Sir:

Please amend the above-identified application as follows:

IN THE SPECIFICATION

Page 1, line 3, after "This application" insert --is a divisional application of U.S. Patent Application Serial No. 09/157,700, filed September 21, 1998 which--.

IN THE CLAIMS

Please delete claims 1-20.

Please add new claims 21-34 as follows:

--21. A slider for supporting a transducer element for a data storage system comprising:

a rigid member including opposed leading and trailing edges and opposed upper and lower surfaces, the lower surface including an air bearing surface;

landing pads extending from the air bearing surface and spaced from the trailing edge of the rigid member to define a contact interface with a disc surface;

a raised side rail on the air bearing surface; and

at least one pressure relief trench formed in the raised side rail proximate to the trailing edge of the rigid member and spaced from the landing pads to reduce capillary pressure and area of a meniscus due

to a disc lubricant proximate to the trailing edge of the rigid member.

22. The slider of claim 21 wherein the rigid member includes a center rail and the center rail includes a pressure relief trench.

23. The slider of claim 21 wherein the trench is transversely aligned.

24. The slider of claim 21 wherein the trench is opened at opposed ends thereof to form a through channel.

25. The slider of claim 21 wherein the trench is longitudinally aligned.

26. The slider of claim 21 wherein the trench is sloped relative to a plane of the air bearing surface.

27. The slider of claim 21 wherein the air bearing surface includes a plurality of spaced pressure relief trenches.

28. The slider of claim 21 including a center rail.

29. The slider of claim 21 wherein the trench includes a depth dimension sized so that separation of the rigid member and the disc at the trench during contact of the slider with the disc surface is equal to or greater than $2R_e$ to balance capillary pressure and disjoining pressure of a lubricant fluid on the disc surface, where R_e is a radius of a leading edge of a meniscus formed between the disc surface and a capillary surface of the rigid member.

30. The slider of claim 21 wherein the trench is sized to provide a slider-disc interface in the toe-dipping regime in which the landing pads provide an interface with a lubricant on the disc surface.

31. The slider of claim 21 wherein the at least one landing pad is on the rail.

32. The slider of claim 21 including a second raised side rail.

33. The slider of claim 28 including at least one pressure relief trench in the second side rail.

34. A disc storage system including the slider of claim 21.--

REMARKS

This Preliminary Amendment is to the divisional application filed herewith. Consideration and favorable action are respectfully requested.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

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